

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date
12 May 2005 (12.05.2005)

PCT

(10) International Publication Number
WO 2005/042770 A3

(51) International Patent Classification⁷: **G01N 33/569**, C12Q 1/04, 1/37

(74) Agents: HOGLE, Doreen, M. et al.; Hamilton, Brook, Smith & Reynolds, P.C., P.O. Box 9133, 530 Virginia Road, Concord, MA 01742-9133 (US).

(21) International Application Number:
PCT/US2004/036600

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(22) International Filing Date:
3 November 2004 (03.11.2004)

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(25) Filing Language: English

(26) Publication Language: English

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(88) Date of publication of the international search report:
7 July 2005

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(30) Priority Data:
60/516,692 3 November 2003 (03.11.2003) US
60/578,811 9 June 2004 (09.06.2004) US

(71) Applicants (for all designated States except US): ETHICON, INC. [US/US]; Route 22 West, Somerville, NJ 08876 (US). EXPRESSIVE CONSTRUCTS, INC. [US/US]; 6 Park Avenue, Worcester, MA 01605 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): SEBASTIAN, Shite [IN/US]; 37 Harley Drive, Apt. 10, Worcester, MA 01606 (US). COLPAS, Gerard, J. [US/US]; 310 Wachusett Street, Holden, MA 01520 (US). ELLIS-BUSBY, Diane, L. [US/US]; 875 Brockelman Road, Lancaster, MA 01532-2317 (US). HAVARD, Jennifer, M. [US/US]; 9 Eaton Road, Framingham, MA 01701 (US). SANDERS, Mitchell, C. [US/US]; 20 Stillwater Heights Drive, West Bolyston, MA 01583 (US).



A3

WO 2005/042770 A3

(54) Title: METHODS, PEPTIDES AND BIOSENSORS USEFUL FOR DETECTING A BROAD SPECTRUM OF BACTERIA

(57) Abstract: Described herein are methods of detecting a wound infection and for detecting the presence or absence of bacteria, for example, wound bacteria in a sample, by contacting a sample with a peptide substrate derived from the modification of the reactive site loop (RSL) domain of the α -1-proteinase inhibitor. In the current invention, we have demonstrated that these peptide substrates without the alpha 1 protein can be efficiently used as peptide substrates. The modification or the absence of modification of this peptide substrate by the enzyme produced and/or secreted by the bacteria, can serve as an indicator for the presence or absence of the bacteria in the sample. The present invention also features a biosensor for detecting the presence or absence of bacteria in a sample.